NASA TECH BRIEF

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Forming Blocks Speed Production of Strain Gage Grids

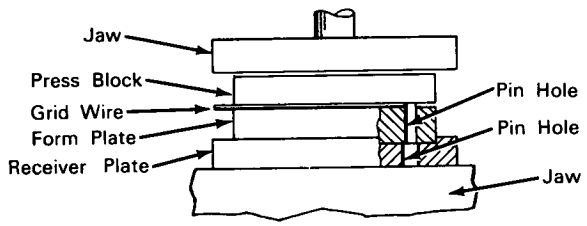

FIGURE 1

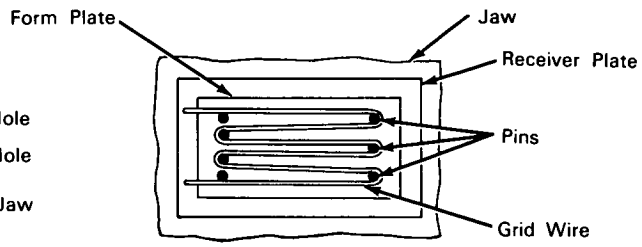

FIGURE 2

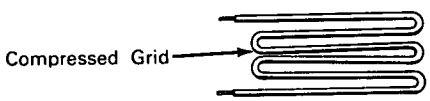

FIGURE 3

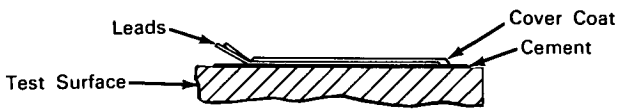

FIGURE 4

The problem: Current strain gage manufacture involves the use of a jig to produce the desired grid configuration. The entire jig, holding the grid, is placed on the test surface while the grid is partially cemented to the surface and the jig is then removed. The procedure requires considerable skill and is time consuming.

The solution: A wire grid-forming tool that is simple to operate, produces a stabilized grid which can be readily handled with reasonable care, and lends itself to production operation.

How it's done: The tool, shown in figure 1, consists of two steel jaws, a steel form plate and a steel receiver plate, each of which has aligned pin holes, the holes in the receiver plate being slightly larger in diameter. Hard steel pins slightly longer than the depth of the form plate are pressed in the holes of the form plate so that they protrude slightly above it, giving the desired grid structure. The grid wire is then woven back and forth about these pins, forming the structure shown in figure 2. The formed grid with its supporting structure is then placed under a slight pressure. The degree of pressing of the gage wire is not necessarily critical but should be adequate to fix the grid form to a point where the grid may be handled without permanent distortion of shape. The flattening of the grid wire is a cold working process and the result of this operation is to produce a stabilized grid which can be readily handled with reasonable care for direct use, for storage or for shipment. Upon tool disassembly, the pins will protrude slightly beneath the bottom surface of the form plate, having entered slightly the larger holes in the receiver plate. By merely reversing the receiver plate, the tool is ready for the next grid forming cycle. Figure 4 shows one application of the finished grid. The test surface is lightly precoated with cement and the grid placed on this film and a cement cover coat applied.

(continued overleaf)

Notes:

1. The grid form may be widely varied by machining the appropriate components of the tool to the desired contours.
2. Quality strain gage grids have been thus formed from tungsten, platinum, nickel, and nickel alloys over a gage resistance range of from 50 to 500 ohms.
3. Inquiries concerning this invention may be directed to:

   Technology Utilization Officer
   Lewis Research Center
   21000 Brookpark Road
   Cleveland, Ohio, 44135
   Reference: B65-10009

Patent status: NASA encourages the commercial use of this invention. It has been patented by NASA (U.S. Patent No. 2,991,671) and royalty-free license rights will be granted for its commercial development. Inquiries about obtaining a license should be addressed to NASA, Code AGP, Washington, D.C., 20546.

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